

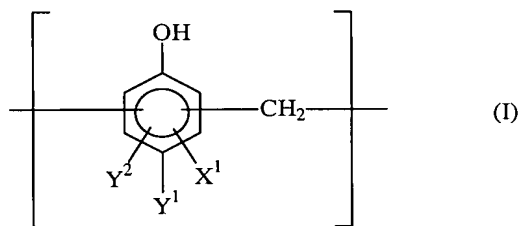
## **Amendments to the Claims:**

*This listing of claims will replace all prior versions, and listings, of claims in the application:*

### **Listing of Claims:**

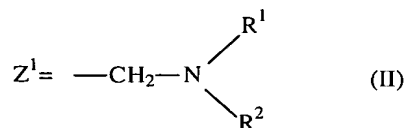
Claims 1-13 (Cancelled).

14. (Currently Amended) A metal-coating-film laminate system comprising:  
a metal substrate;  
a coating applied to the metal substrate; wherein  
said coating has a thickness that is from 5 to 500 nm;  
said coating has a content of carbon atoms that corresponds to from 5 to 500 mg/m<sup>2</sup> of the coating area;  
said coating covers at least 90% of the surface of the metal; and  
said coating comprises 0.01 g/L to 2 g/L of polymer molecules that comprise units conforming to general formula (I):



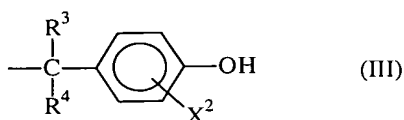
in which:

X<sup>1</sup> independently in each structural unit is a hydrogen atom or a moiety Z<sup>1</sup> conforming to general formula (II):

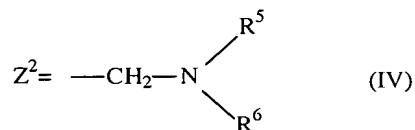


in which each of  $R^1$  and  $R^2$  independently is a hydrogen atom, a  $C_1$  to  $C_{10}$  monovalent alkyl moiety, or a  $C_1$  to  $C_{10}$  monovalent hydroxyalkyl moiety;

$Y^1$ , independently for each unit, is a hydrogen atom, a hydroxyl group, a  $C_1$  to  $C_5$  alkyl moiety, a  $C_1$  to  $C_5$  hydroxyalkyl moiety, a  $C_6$  to  $C_{12}$  aryl, benzyl, or benzo moiety, or a moiety conforming to general formula (III):



in which, independently for each unit according to general formula (I) in which  $Y^1$  conforms to general formula (III), each of  $R^3$  and  $R^4$  is independently a hydrogen atom, a  $C_1$  to  $C_{10}$  alkyl moiety, or a  $C_1$  to  $C_{10}$  hydroxyalkyl moiety, and  $X^2$  is a hydrogen atom or a moiety  $Z^2$  conforming to general formula (IV):



in which each of  $R^5$  and  $R^6$  is independently a hydrogen atom, a  $C_1$  to  $C_{10}$  alkyl moiety, or a  $C_1$  to  $C_{10}$  hydroxyalkyl moiety; and

$Y^2$ , independently for each unit, is a hydrogen atom or, when  $Y^1$  and  $Y^2$  are bonded to adjacent carbon atoms in the aromatic ring shown in general formula (I),  $Y^1$  and  $Y^2$ , and said adjacent carbon atoms to which  $Y^1$  and  $Y^2$  are bonded together may constitute a condensed benzene ring,

said polymer molecules that comprise structural units conforming to general formula (I) having a total number of  $Z^1$  and  $Z^2$  moieties and a distinct (but not necessarily unequal) total number of (i) units conforming to general formula (I) and (ii)  $Y^1$  moieties that conform to general formula (III), such that the total number of  $Z^1$  and  $Z^2$  moieties has a ratio to the total number of units conforming to general formula (I) and  $Y^1$  moieties that conform to general formula (III) that is from 0.2:1.0 to 1.0:1.0; and

a film applied to the coating.

15. (Currently Amended) A metal-coating-film laminate system according to claim ~~[[19]]~~14, in which Y<sup>1</sup> in general formula (I) conforms to general formula (III).

16. (Currently Amended) A metal-coating-film laminate system according to claim ~~[[19]]~~14, in which the coating comprises a total of at least 0.1 mg/m<sup>2</sup> of phosphorus atoms present in phosphoric acid-like compounds and silicon atoms present in organosilicon compounds.

17. (Currently Amended) A metal-coating-film laminate system according to claim ~~[[20]]~~15, in which the coating comprises a total of at least 0.1 mg/m<sup>2</sup> of phosphorus atoms present in phosphoric acid-like compounds and silicon atoms present in organosilicon compounds.

18. (Currently Amended) A metal-coating-film laminate system according to claim ~~[[19]]~~14, wherein:

said coating has a thickness in a range from 50 to 300 nm; and

said coating has a content of carbon atoms that corresponds to from 50 to 200 mg/m<sup>2</sup> of the coating area.

19. (Currently Amended) A metal-coating-film laminate system according to claim ~~[[19]]~~14 in which the coating system is applied to the metal substrate as a reactive coating.

20. (Currently Amended) A metal-coating-film laminate system according to claim ~~[[19]]~~14 in which the coating system is applied to the metal substrate as a dry-in-place coating.

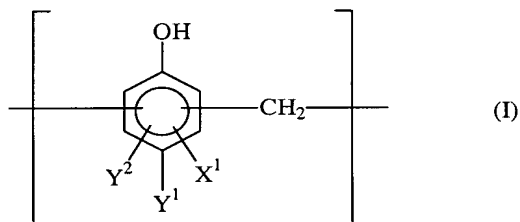
21. (Currently Amended) A metal-coating-film laminate system according to claim [[19]]14 in which the metal substrate is selected from the group consisting of iron, steel, and aluminum.

22. (Currently Amended) A method of use of a coating composition in a film laminating process, comprising the steps of:

(1) providing a surface of a metal substrate with the coating composition so that the metal substrate is suitable for laminating a film thereto, said method comprising the steps of:

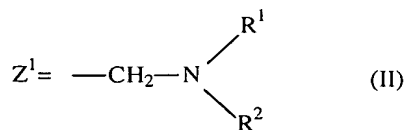
(I) preparing the coating composition by providing a waterborne composition that comprises water and:

(A) at least 0.01 g/L to 2 g/L of polymer molecules comprising units conforming to general formula (I):



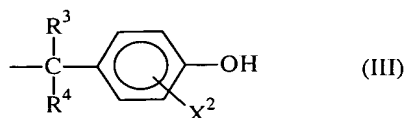
in which:

X<sup>1</sup>, independently in each structural unit, is a hydrogen atom or a moiety Z<sup>1</sup> conforming to general formula (II):

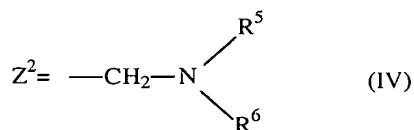


in which each of R<sup>1</sup> and R<sup>2</sup> independently is a hydrogen atom, a C<sub>1</sub> to C<sub>10</sub> monovalent alkyl moiety, or a C<sub>1</sub> to C<sub>10</sub> monovalent hydroxyalkyl moiety;

Y<sup>1</sup>, independently for each unit, is a hydrogen atom, a hydroxyl group, a C<sub>1</sub> to C<sub>5</sub> alkyl moiety, a C<sub>1</sub> to C<sub>5</sub> hydroxyalkyl moiety, a C<sub>6</sub> to C<sub>12</sub> aryl, benzyl, or benzo moiety, or a moiety conforming to general formula (III):



in which, independently for each unit according to general formula (I) in which Y<sup>1</sup> conforms to general formula (III), each of R<sup>3</sup> and R<sup>4</sup> is independently a hydrogen atom, a C<sub>1</sub> to C<sub>10</sub> alkyl moiety, or a C<sub>1</sub> to C<sub>10</sub> hydroxyalkyl moiety, and X<sup>2</sup> is a hydrogen atom or a moiety Z<sup>2</sup> conforming to general formula (IV):



in which of R<sup>5</sup> and R<sup>6</sup> is independently a hydrogen atom, a C<sub>1</sub> to C<sub>10</sub> alkyl moiety, or a C<sub>1</sub> to C<sub>10</sub> hydroxyalkyl moiety; and

Y<sup>2</sup>, independently for each unit, is a hydrogen atom or, when Y<sup>1</sup> and Y<sup>2</sup> are bonded to adjacent carbon atoms in the aromatic ring shown in general formula (I), Y<sup>1</sup> and Y<sup>2</sup>, and said adjacent carbon atoms to which Y<sup>1</sup> and Y<sup>2</sup> are bonded together may constitute a condensed benzene ring,

said polymer molecules that comprise structural units conforming to general formula (I) having a total number of Z<sup>1</sup> and Z<sup>2</sup> moieties and a distinct (but not necessarily unequal) total number of (i) units conforming to general formula (I) and (ii) Y<sup>1</sup> moieties that conform to general formula (III), such that the total number of Z<sup>1</sup> and Z<sup>2</sup> moieties has a ratio to the total number of units conforming to general formula (I) and Y<sup>1</sup> moieties that conform to general formula (III) that is from 0.2:1.0 to 1.0:1.0;

and, optionally, at least one of the following components:

- (B) phosphoric acid-type compounds; and
- (C) organosilicon compounds,

said waterborne composition having a pH in a range from 2.5 to 6.5;

(II) contacting said surface of said metal substrate with the waterborne composition provided in step (I) for a sufficient time at a sufficient temperature to form a solid coating containing constituents of said waterborne composition, said solid coating adhering to said surface of said metal substrate and being itself covered, at least initially, by a coating of liquid;

(III) after step (II), drying the metal surface so as to remove from the metal surface the liquid constituents of the coating initially formed in step (II) or of a successor liquid coating formed by rinsing the surface of said metal substrate as modified after step (II) with water; and

(2) applying a film to the metal substrate coated with the composition provided according to step (1) to form a metal-coating-film laminate system whereby the method reduces industrial waste and minimizes gaseous emissions.

23. (Currently Amended) A method of use of a coating composition in a film laminating process according to claim ~~[[27]]~~22, in which Y<sup>1</sup> in general formula (I) conforms to general formula (III).

24. (Currently Amended) A method of use of a coating composition in a film laminating process according to claim ~~[[28]]~~23, in which the waterborne composition provided in step (I) comprises ~~a total of at least 0.01 g/l of phosphorus atoms present in phosphoric acid-like compounds and~~ silicon atoms present in organosilicon compounds.

25. (Currently Amended) A method of use of a coating composition in a film laminating process according to claim ~~[[28]]~~23, wherein ~~the waterborne composition provided in step (I) contains at least 0.1 g/l of polymer molecules comprising units conforming to~~

~~general formula (I)~~ and the coating of liquid formed in step (II) is rinsed with water so as to form a successor coating before completion of step (III).

26. (Cancelled)

27. (Currently Amended) A method of use of a coating composition in a film laminating process according to claim ~~[[27]]~~22, in which the coating system is applied to the metal substrate as a reactive coating.

28. (Currently Amended) A method of use of a coating composition in a film laminating process according to claim ~~[[27]]~~22, in which the coating system is applied to the metal substrate as a dry-in-place coating.

29. (Currently Amended) A method of use of a coating composition in a film laminating process according to claim ~~[[27]]~~22, in which the metal substrate is selected from the group consisting of iron, steel, and aluminum.

30. (Currently Amended) A method of use of a coating composition in a film laminating process according to claim ~~[[27]]~~22 wherein the film is selected from the group consisting of polyethylene, polycarbonate, polyester, and polymers of vinyl terephthalate.

---